

GERASIMOV, A.K., inzh., red.; SHAPIRO, L.L., kand. tekhn.nauk,
red.; IVYANSKIY, G.B., doktor tekhn. nauk, red.; NIKONOV,
M.A., inzh., red.

[Construction specifications and regulations] Stroitel'nye
normy i pravila. Moskva, Gosstroizdat. Pt.3. Sec.V. ch.3.
[Precast concrete and reinforced concrete structures; regula-
tions for performing and accepting assembly work] Betonnye i
zhelezobetonnye konstruksii sbornye; pravila proizvodstva i
priemki montazhnykh rabot (SNiP III-V. 3-62). 1963. 18 p.
(MIRA 17:3)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam
stroitel'stva. 2. Gosstroy SSSR (for Gerasimov). 3. Mezhdue-
domstvennaya komissiya po peresmotru Stroitel'nykh norm i pra-
vil (for Shapiro). 4. Nauchno-issledovatel'skiy institut
organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroi-
tel'stvu Akademii stroitel'stva i arkhitektury SSSR (for
Ivyanskiy, Nikonov).

KAPLAN, L.M.; SHAPIRO, L.L.; BER, A.S., inzh., nauchn. rod.

[Operation and production planning in construction and
assembling organizations] Operativno-proizvodstvennoe
planirovanie v stroitel'no-montazhnykh organizatsiakh.
Leningrad, Stroiizdat, 1964. 170 p. (MIRA 17:6)

LAZAREVA, S.Ye.; KOROLEVA, N.D.; KIRILLOV, L.N.; FRIDLYAND, G.I.;
SHAPIRO, L.M.; LEBEDEV, K.A.; PEKH, Yu.Yu.; MEKLER, E.A.

Spinning of chemically treated (boiled and bleached) roving.
Tekst. prom. 19 no.7:42-45 J1 '59. (MIRA 12:11)
(Textile finishing)

SHAPIRO, L. M.

SHAPIRO, L. M. -- "Physicochemical Analysis of the System of Cobalt Chloride, Dithiooxamide, Water and its Analytical Significance." Sub 26 Nov 52, Inst of General and Inorganic Chemistry imeni N. S. Kurnakov. (Dissertation for the Degree of Candidate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

TANANAYEV, I.V.; SHAPIRO, L.M.

Physicochemical analysis of the system cobalt chloride -- rubesnic
acid -- water. Zhur.neorg.khim. 2 no.6:1424-1427 Je '57.
(MIRA 10:10)

1.Minskiy gosudarstvennyy meditsinskiy institut.
(Cobalt chloride) Oxamide) (Water)

TANANNYEV, I.V., akademik, prof.; SHAPIRO, L.M., kand.khim, nauk

Phototurbidimetric titration of cobalt ions with rubeanic acid.

Sbor.nauch.rab.Bel.politekh.inst. no.63:159-163 '58.

(MIRA 12:4)

(Cobalt--Analysis) (Oxamide)

SHAPIRO, L.M.

Polarographic properties of some phosphorus organic compounds.
Dokl. AN BSSR 3 no.4:146-149 Ap '59. (MIRA 12:10)

1. Predstavleno akademikom AN BSSR N.F. Yermolenko.
(Polarography) (Phosphorus organic compounds)

SHAPIRO, L.N.

Polymerization of colophony with hydrogen fluoride. *Gidroliz. i
lesokhim.prom.* 15 no.2:11-12 '62. (MIRA 18:3)

1. Tsentral'nyy nauchno-issledovatel'skiy lesokhimicheskiy
institut.

40059

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S/166/62/000/003/007/010
B163/B104

AUTHORS: Andreyev, I. S., Shapiro, L. M.

TITLE: Some characteristics of relaxation processes in powder electroluminescent phosphors subject to pulsed excitation

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 13, 1962, 65 - 69

NOTE: In order to study relaxation processes in electroluminescent condensers experimentally, square wave pulses of variable recurrence frequency (100 to 8000 cps) and amplitude (0 to 700 v), with a rise time of 4 μ sec, were applied to a condenser having a layer of luminescent material 30 to 150 μ thick sedimented between its plates from an aqueous emulsion without a binder. The mark-space-ratio of the pulses was not variable. The time dependence of luminescent radiation was measured by a photomultiplier ФЭУ-19 (FEU-19M) having one of the condenser electrodes made of conducting glass affixed to its input window. The multiplier output signal was displayed on a cathode ray tube. On studying the shapes of the luminescence peaks at the front and back of each square wave pulse it was found

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Some characteristics of relaxation ...

that the rise time of the luminescence peaks is of the order of 3 to $12 \cdot 10^{-6}$ sec and the decay time 4 to $12 \cdot 10^{-5}$ sec. The build-up and decay of the polarization field not only start the luminescence processes but also occasion the quenching of existing luminescence. From the fact that the decay time of the first luminescence peak decreases with increasing recurrence frequency, it is concluded that the recombination processes proceed faster if an outer electrostatic field is applied. In condensers with an appreciable conduction current matters are more complicated, it being found that the processes are slower and more strongly dependent on recurrence frequency. In this case the time dependence of luminescent radiation is governed by the polarity of the condenser, i. e. by whether the metallic or the transparent electrode is negative. It is concluded that where conduction is appreciable there exists not only intrinsic but also induced electroluminescence. There are 2 figures and 3 tables.

ASSOCIATION: Tashkentskiy gosuniversitet im. V. I. Lenina (Tashkent State University imeni V. I. Lenin)

SUBMITTED: February 10, 1961
Card 2/2

ANDREYEV, I.S.; SHAPIRO, L.M.

Interrelation of the spectral luminescence bands of ZnS - Cu phosphors.
Nauch. trudy TashGu no.221.Fiz. nauki no.21:31-44 '63.
(MIRA 17:4)

POLITOV, I.V.; SHAPIRO, L.M.

Removing fins on die castings by vibration treatment. Lit. proizv.
no.12:10-11 D '64. (MIRA 18:3)

FRIDLYAND, G.I., starshiy nauchnyy sotrudnik; SHAPIRO, L.M., mladshiy
nauchnyy sotrudnik

Oxidation boiling of flax yarn. Nauch.issl.trudy TSNIILV 12:
141-159 '59. (MIRA 15:8)
(Yarn) (Bleaching)

SHAPIRO, L.N.
AUTHOR: Avakyan, A.B., Shapiro, L.N., and Sharapov, V.A., 98-58-4-11/18
Engineers
TITLE: Some Questions Pertaining to Water Reservoir Projects (Nekotoryye voprosy proyektirovaniya vodokhranilishch)
PERIODICAL: Gidrotekhnicheskoye Stroitel'stvo, 1958, Nr 4, pp 45-47 (USSR)
ABSTRACT: These are answers to letters and questions on compensation of losses incurred by the flooding of land for water reservoirs. G.A. Chernyy is of the opinion that such losses are frequently minimized for the sake of boosting the effectiveness of hydrotechnical installations. The problem of such losses should be considered from three angles: 1) economic evaluation of the land to be sacrificed, 2) economic re-settling of the farming population, and 3) compensation for the loss of agricultural production in the flooded area. There exist no hard and fast rules, nor any universal method for solving this problem, since each case differs. Any compensatory action for land losses should be preceded by an economic analysis of each farm. All farms affected should be divided in two groups - those in need of compensation and those requiring no compensation. The case of each farm should then be considered individually and collectively, with a view to possible redistribution of the land and re-

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98-58-4-11/18

Some Questions Pertaining to Water Reservoir Projects

organization of the agricultural production. In view of the fact that construction of a hydroelectrical installation with an adjoining water reservoir brings about a change in the economic structure of the area in which it is located, a certain reorientation of the population should try to adapt the people to the new economic conditions. There are two Soviet references.

AVAILABLE: Library of Congress

Card 2/2

1. ~~Dams~~-Sociological factors Evaluation analysis
2. Water power-USSR
3. Dams-

SMETANICH, V.S.; SHAPIRO, L.N.

"Projects of the near and distant future" by A.B.Avakian, E. G.
Romashkov. Reviewed by V.S.Smetanich, L.N.Shapiro. Geog. v shkole
25 no.2:92 Mr-Apr '62. (MIRA 15:2)
(Water resources, Development) (Avakian, A.B.) (Romashkov, E.G.)

AVAKYAN, A.B.; SMETANICH, V.S.; SHAPIRO, L.N.; SHARAPOV, V.A.

Reservoirs of the U.S.S.R. and the prospects for their construction.
Vop. geog. no.57:58-77 '62. (MIRA 15:10)
(Reservoirs) (Hydraulic engineering)

YAKOVLEV, N.M.; KARPOV, L.N.; MASHBITS, Ya.G.; SMETANICH, V.S.; SHAPIRO, L.N.

Book reviews. Geog. v shkole 26 no.6:88-92 N-D '63.
(MIRA 17:1)

1. Ul'yanovskiy pedagogicheskiy institut (for Yakovlev).
2. Vsesoyuznyy ordena Lenina proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut im. Z.Ya. Zhuka (for Smetanich).
3. Institut "Energoset'proyekt" (for Shapiro).

BOYCHENKO, S.M., inzh.; SHAPIRO, L.P.

Operation of the Kiev municipal outdoor lighting system.
Svetotekhnika 8 no.8:24-25 Ag '62. (MIRA 15:7)

1. Upravleniye ekspluatatsii elektrosetey naruzhnogo
osveshcheniya, Kiyev.
(Kiev--Electric lighting)

INIKHOV, G.S., zasl. deyatel' nauki i tekhniki, doktor khim. nauk, prof.; SKORODUMOVA, A.M., kand. biol. nauk; SHAPIRO, L.R. [deceased]; MILYUTINA, L.A., inzh.; DEMUROV, M.G., kand. sel'khoz. nauk; LEBEDEVA, K.S., kand. sel'khoz. nauk; KYURKCHAN, V.N.; VASILEVSKIY, V.G., inzh.; SAVINOVSKIY, N.G., kand. tekhn. nauk; VEDRASHKO, V.F., kand. med. nauk; SOKOLOVSKIY, V.P., prof.; BEGUNOV, V.L., inzh.; KAZENNOVA, A.R.; VEDRASHKO, V.F., kand. med. nauk; KOSTYGOV, V.V., red.; SKURIKHIN, M.A.; MOLCHANOVA, O.P., doktor biol. nauk, prof.; SPERANSKIY, G.N., zasl. deyatel' nauki, doktor med. nauk, prof.; KISINA, Ye.I., tekhn. red.

[Dairy foods] Molochnaia pishcha. Moskva, Pishchepromizdat, 1962. 419 p. (MIRA 15:10)

1. Glavnyy kulinar Ministerstva trgovli RSFSR (for Kazennova).
 2. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Speranskiy, Skurikhin).
 3. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Molchanova).
- (Cookery (Dairy products)) (Dairy products)

SHAPIRO, L. R.

USSR/Medicine-Tuberculosis, Therapy
Medicine-Tuberculosis, Pulmonary

Mar 49

"Utilization of Citral in Cases of Tuberculosis of the Upper Respiratory Tract and the Oral Cavity," Prof F. I. Dobromyl'skiy, L. R. Shapiro, Moscow, 3/4 p

"Sov Med" No 3

Describes analgesic effect of citral. It also has antiphlogistic properties. Describes its successful use in a case of pulmonary tuberculosis.

PA 46/49T79

38335 SHAPIRO, L. R.

Mestnoye lecheniye streptomitsinom tuberkuleznykh porazheniy polosti
rta, zeva, glotki i gortani. Problemy tuberkuleza, 1949, No 6, s. 54

SHAPIRO, L. R., Physician

"Alcoholization of the Upper Laryngeal Nerve in Connection With Anatomotopographical Data." Sub 10 Sep 51, Second Moscow State Medical Inst imeni I. V. Stalin.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SC: Sum. No. 480, 9 May 55.

SHAPIRO, L.R., kandidat meditsinskikh nauk (Moskva)

Role of the nurse in the treatment of tuberculosis of the lungs
and larynx. Med.sestra 16 no.4:19-23 Ap '57. (MLRA 10:6)
(NURSES AND NURSING) (LARYNX--TUBERCULOSIS)

CHAFIRO, J. J., *Contaminación del medio ambiente*

Use of aerosol of the "Lactobacillus" preparations in
tuberculosis of the lungs and bronchi. *Sot. med.* 28
no. 6:70-74. 1973. (MIRA 18:8)

1. Bronkholerologiya i klyuch otdeleye (rukovoditel' -
prof. A.N. Vosnesenskiy) in *Leningradskoye nauchno-issledovatel's-
skoye instituta tuberkuleza i rektor* kand. med. nauk T.P.
Mishalova, *Zametilki po klyuch otdeleye* - prof. D.D. Aseyev)
Ministerstva zdravookhraneniya, 1973.

1954, 1. 4.

"The Ground Beet Fauna of the Forest Steppes and Steppe Zones of the Ukrainian SSR (Coleoptera Insects of the Chrysomelidae Family)." Dr Riel Sed, Kharkov State University A. N. Gorkiy, Min Higher Education USSR, Kharkov 1954. 181, 201, 206 pp.

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13) 34: 571. 40, 70 Jul 55

SHAPIRO, L.S.; DESOV, A.Ye., professor, doktor tekhnicheskikh nauk,
redaktor; SALAZKOV, N.P., tekhnicheskiiy redaktor

[Scientific work of the Central Scientific Research Institute of
Industrial Construction for 1956; annotated list of published and
unpublished works of 1955] Nauchnye raboty TsNIPS za 1955 god;
annotirovannyi obzor opublikovannykh i neopublikovannykh rabot za
1955 god. Sost. L.S.Shapiro. Pod red. A.E.Desova. Moskva, 1956.
146 p. (MLRA 9:11)

1. Moscow. TSentral'nyy nauchno-issledovatel'skiy institut
promyshlennykh sooruzheniy.
(Bibliography--Building)

SHAPIRO, L.S.

Conference on the electrothermal stretching of reinforcements
of prestressed reinforced concrete construction elements.
Izv.ASiA no.3:168-170 '59. (MIRA 13:6)

1. Nachal'nik informatsionno-izdatel'skogo otdela Instituta
betona i zhelezobetona Akademii stroitel'stva i arkhitektury
SSSR.
(Electric heating) (Prestressed concrete)

SAPIRO, L.S., inzh.; ZHEFOMRITSKIY, V.Ya., inzh.

Semiautomatic welding of metallic structures in a protective water vapor atmosphere. Svar. proizvod. no.3:22-24 Mr '62. (MIRA 15:2)

1. Zavod im. 15-letiya Leninskogo kommunisticheskogo soyuza
molodezhi Ukrainy.
(Structural frames--Welding) (Protective atmospheres)

SHAPIRO, L.S.

Concrete and Reinforced Concrete Institute. Izv. ASiA no.2:121-
122 '61. (MIRA 15:1)

1. Rukovoditel' informatsionno-izdatel'skogo otdela.
Nauchno-issledovatel'skogo instituta betona i zhelezobetona
Akademii stroitel'stva i arkhitektury SSSR.
(Concrete--Testing)

SHAPIRO, L.S.

Automation of the processes of preparing, placing and compacting
concrete mixes. Bet. 1 zhel.-bet. 9 no.3:144-3 of cover
Mr '63. (MIRA 16:4)

1. Rukovoditel' sektora nauchno-tekhnicheskoy informatsii
Nauchno-issledovatel'skogo instituta betona i zhelezobetona
Akademii stroitel'stva i arkhitektury SSSR.
(Automation—Congresses)
(Concrete—Congresses)

SHAPIRO, L.S.

Newly developed concrete and reinforced concrete structural elements. Biul. stroi. ~~tem. 72:25.10:38-40:0~~ '63. (MIRA 16:11)

1. Rukovoditel' sektora informatsii Nauchno-issledovatel'skogo instituta betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR.

MEDVEDEV, V.M.; SHAPIRO, L.S.

Raise the level of anticorrosive protection of structural elements.
Prom. stroi. 41 no.10:51-52 0 '63. (MIRA 16:11)

SHAPIRO, L.V.

Reduction of the time lost on roll changes in rolling mills.
Stal' 15 no.11:1025-1027 N '55. (MIRA 9:1)

1.Orgchermet.
(Rolling mills)

SVETS, V.Ye., inzhener; ZAMKOVSKIY, V.R., inzhener; ~~SHAPIRO, L.V.,~~
inzhener.

Conference on the preparation of metal for rolling and finishing of
the rolled shapes. Metallurg no.10:36-39 0 '56. (MLBA 9:11)

1. Orgchermet.

(Rolling (Metalwork))

ZAMKOVSKIY, V.R., st. nauchnyy sotrudnik,; SVETS, V.Ya, ml. nauchnyy
sotrudnik,; SHAPIRO, L.V., otv. red.: LIBERMAN, S.S., red. izd-va,;
ANDREYEV, S.P., tekhn. red.

[Preparing metal for rolling and the finishing of rolled products;
generalization of progressive practices] Podgotovka metalla k
prokatke i otdelke prokata; obobshchenie peredovogo opyta. Khar'kov,
Gos. nauchno-tekhn. izd-vo lit-ry po cherno i tsvetnoi metallurgii,
1958. 279 p. (MIRA 11:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii
proizvodstva i truda v chernoy metallurgii.
(Rolling(Metalwork))

SHAPIRO, L.V., inzh.; SVETS, V.Ye., inzh.

Specialization of rolling mills and the mastering of new
economical rolled product ~~shapes~~ in plants of the Ukrainian
S.S.R. Met. i gornorud. prom. no.2:19-23 Mr-Ap '62.

(MIRA 15:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii
proizvodstva i truda chernoy metallurgii.

(Ukraine--Rolling (Metalwork))

YAKUBOV, A.M.; ZAKIROV, K.Z.; SAGATOV, S.S.; SHAPIRO, L.V.

Distribution of copper, manganese, and molybdenum in soils and
in the plants, Polygonum coriarium Grig. and Rumex tianschanicus
A. Los. Uzb. biol. zhur. 7 no.3:12-17 '63. (MIRA 16:9)

1. Institut botaniki AN UzSSR i Institut pochvovedeniya Ministerst-
va sel'skogo khozyaystva UzSSR.

SOROKA, E.D.; SHAPIRO, L.V.

Experience in the varnishing of wooden parts with preheated
NTS-315M varnish. Lakokras. mat. 1 ikh prim. no.5:68 '63.
(MIRA 16:11)

SHAPIRO, Leonid Viktorovich; SVET'S, Vladimir Yevseyevich;
Prinimal uchastiye ZHIVAGO, V.I., inzh.; GOL'DENBERG,
Ye.A., red.

[Industrial organization in cogging mills] Organizatsiia
proizvodstva v obzhimnykh tsekhakh. Moskva, Izd-vo Metal-
lurgii, 1964. 118 p. (MIRA 17:6)

SVETS, V.Ye., SHAPIRO, I.V.

New economically shaped rolled products for machine construction.
Met. i gornorud. prom. no.1:38-39 Ja-F '64. (MIRA 17:10)

SOKOLOV, A.D.; SHAPIRO, L.Ya.

Use of infrared rays in the plastics industry. Khim.prom.no.1:21-
23 Ja'47. (MLRA 8:12)

1. Nachal'nik nauchno-issledovatel'skoy laboratorii Zavod "Karbolit"
(for Sokolov). 2. Rukovoditel' gruppy laboratorii Zavod "Karbolit"
(for Shapiro)
(Plastics) (Infrared rays--Industrial applications)

KRYUCHKOV, D.M.; SHAPIRO, L.Ya.

Wide-band bridge for the measurement of impedances and conductivities. Poluprov.prib. i ikh prim. no.3:116-147 '58.
(MIRA 12:4)

(Impedance(Electricity)--Measurement)
(Electric conductivity--Measurement)

CHILIKIN, M.G., doktor tekhn.nauk prof.; SANDLER, A.S., kand.tekhn.nauk,
dotsent SHAPIRO, L.Ya., inzh.

Two-motor machine-valve stage with semiconductor rectifiers.
Elektrichestvo no.8:50-56 Ag '61. (MIRA 14:10)

1. Moskovskiy energeticheskiy institut.
(Electric driving)

SANDLER, A.S.; SHAPIRO, L.Ya.

Selecting the controlled electric drive of centrifugal pumps.
Gaz. prom. 7 no.2:48-49 1962. (MIRA 17:6)

SHAPIRO, L.Ya., inzh.

Selecting the type of electric motors for ammonia refrigerating
systems. Khol.tekh. 39 no.2:49-52 Mr-Ap '62. (MIRA 15:4)
(Refrigeration and refrigerating machinery)
(Electric engineering--Safety measures)

SANDLER, Abram Solomonovich, doktor tekhn.nauk, prof.; SHAPIRO, Leonid
Yakovlevich, aspirant

Mechanical characteristics of a two-motor rectifier-machine stage.

Izv. vys. ucheb. zav.; elektromekh. 6 no.6:671-675 '63.

(MIRA 16:9)

1. Kafedra elektrooborudovaniya promyshlennykh predpriyatiy
Moskovskogo energeticheskogo instituta.

(Electric driving)

SANDLER, A.S., doktor tekhn. nauk, prof.; SHAPIRO, L.Ya., inzh.

Static characteristics of machines with dual feed and double-
zone regulation of angular velocity. Elektrichestvo no.12:
61-67 D '64. (MIRA 18:12)

L. Moskovskiy energeticheskiy Institut.

L 1693-66 EWT(1)/EPA(s)-2

ACCESSION NR: AP5017463

UR/0144/65/000/006/0660/0665
621.313.33+62.523

AUTHOR: Shapiro, L. Ya. (Aspirant)

TITLE: Determining the parameters and selecting the frequency changer in the rotor circuit of an induction motor with two-range speed regulation

SOURCE: IVUZ. Elektromekhanika, no. 6, 1965, 660-665

TOPIC TAGS: induction motor

ABSTRACT: Some considerations are set forth re a doubly-fed 3-phase induction motor with 18 controlled semiconductor rectifiers acting as a frequency changer in the rotor circuit. Such induction motors are suitable for driving large (4000 kw) centrifugal compressors and other similar machines. The rotor-current frequency is set by an independent controller. Speed regulation is effected by a simultaneous control of the rotor frequency and voltage; the maximum operation speed may exceed the synchronous speed by 15%. It is claimed that the above doubly-fed motor requires only 2/3 rectifier capacity and 1/3 transformer capacity as compared with those necessary for a conventional thyatron motor (the estimate covers

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SAMOIEN, A.G., doktor tekhn. nauk, prof.; SHAPIRO, L.Ya., kand. tekhn. nauk

Transient processes in a stage with two-zone speed control. Elektri-
chestvo no.8:14-19 Ag '65. (MIRA 18:9)

1. Moskovskiy energeticheskiy institut.

SHAPIRO, M., starshiy nauchnyy sotrudnik

Organizing the exchange of experience. Obshchestv.pit. no.7:24-25
Jl '60. (MIRA 13:8)

1. Nauchno-issledovatel'skiy institut trgovli i obshchestvennogo
pitaniya.
(Restaurants, lunchrooms, etc.) (Testing laboratories)

SHAPIRO, M., inzh.; ZAGRYADSKIY, V., inzh.; LEVINSKIY, L., inzh.

Production line manufacture of thin-walled reinforced concrete
shells. Na stroi. Ros. no.10:31-32 0 '61. (MIRA 14:11)
(Roofs, Shell)

SNOU, G. [Snow, G.A.]; SHAPIRO, M.

Mesons and hyperons. Usp.fiz.nauk 74 no.1:125-139 My '61.
(MIRA 14:6)

(Mesons) (Hyperons)

SHAPIRO, M.A.; SHCHEGOLEV, M.M., prof., nauchnyy red.; BOTOVA, Yu.P.,
red.vypuska; GRUSHIN, A.V., tekhn.red.

[New boilers for use in public buildings abroad] Novye kotly
v kommunal'nom khoziaistve za rubezhom. Moskva, Otdel nauchno-
tekhn.informatsii, 1959. 61 p. (MIRA 13:10)
(Boilers)

GULYAYEV, N.F., kand.tekhn.nauk; SHAPIRO, M.A., inzh.

New design of the combustion chamber of boiler garbage processing plants. Gor.khoz.Mosk. 35 no.7:36-37 JI '61.

(MIRA 14:7)

1. Akademiya kommunal'nogo khozyaystva imeni K.D.Pamfilova.
(Refuse destructors--Equipment and supplies)

KIRPICHNIKOV, A.A., kand. tekhn. nauk; SHAPIRO, M.A., inzh.

Disinfection of hard wastes from therapeutic institutions. Gig. i san.
26 no.5:71-75 My '61. (MIRA 15:4)

1. Iz Akademii kommunal'nogo khozyaystva imeni K.D.Pamfilova.
(WASTE PRODUCTS--DISINFECTION) (HOSPITALS--HYGIENE)

1ST AND 2ND CROSS																										3RD AND 4TH CROSS																									
COMMON ELEMENTS																										COMMON VARIABLES INDEX																									
16 PROCESSES AND PROPERTIES INDEX B *203. Use of Bouman's Method for Demonstrating the Heterogeneity of Structure of Cast Iron. (In Russian.) M. A. Shapiro. Zavodskaya Laboratoriya (Factory Laboratory), v. 13, Sept. 1947, p. 1140-1141. The above method, which has been widely applied to steels, was also found to be useful for determining the location and type of inclusions and other inhomogeneities in centrifugally cast engine cylinders. Its applicability for other cast-iron parts is evident.																																																			
ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION 11 AND 12TH CROSS																																																			

SHAPIRO, M.A.

USSR/Engineering
Machines, Testing
Machinery - Analysis
Jan 49

"The IM-4R Testing Machine and Its Defects," A.S. Krichever, Odessa Inst of Engineers,
Maritime Fleet, M.A. Shapiro, 2 pp

"Zavod Lab" No 1

Im-4R is a new universal testing machine developed by TsNIITMash (Cen Sci Res Inst of Technol and Mach Bldg). A relatively light machine, it cannot be used for testing large heavy parts. Machine is not flexible enough, even within its rated limits. Graduated scales on machine are not fine enough to carry out accurate readings. Electric motor could be improved, and linkage strengthened. Some of the parts are constructed of very poor-grade metal, and in many cases parts had rusted and become unfit for use even before machine was set up.

60/49T35

THATTO, T.A.

Reering

Remote shifting of gear blocks. Stan. i instr. 23 no. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952, ^Unclassified

SOV/137-57-10-19277

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p 119 (USSR)

AUTHOR: Shapiro, M.A.

TITLE: Use of the Thermit Process to Produce Odd-shaped Steel Castings in the Repair of Farm Machinery and Tractors (Ispol'zovaniye termitnogo protsessa dlya polucheniya fasonnykh stal'nykh otlivok pri remonte mashinno-traktornogo parka)

PERIODICAL: Tr. Stavropol'sk. s.-kh. in-ta. 1956, Nr 7, pp 575-584

ABSTRACT: The thermit mix consists of Al-powder, scale, steel swarf, and special additions (ferro alloys etc.). Melting is done in a special ladle. The ignition charge, consisting of thermit, potassium nitrate, Mg shavings, and black powder, is placed over the mixture. Ignition of this charge induces the thermit reaction, which lasts for up to 1 min; the entire cycle of molten steel production lasts ≤ 1.5 min. The chemical composition of thermit steel can be the same as that of ordinary steel, and steel of any desired composition may be made in this way. Thermit steel requires heat treatment. The yield of good product is ~65%. I.B.

Card 1/1

KÖLESNICHENKO, A.G.; SHAPIRO, M.A.; VYSHEMIRSKIY, M.M.

Multilayer coatings of metal molds. Lit. proizv. 'no.5:45 My '62.
(MIRA 16:3)

(Moulding (Founding))

SHAPIRO, Sof'ya Abramovna; SHAPIRO, Moisey Abramovich; STUKOVNIN,
N.D., red.; YEZHOVA, L.L., tekhn.red.

[Analytical chemistry] Analiticheskaya khimiya. Moskva,
Vysshaia shkola, 1963. 338 p. (MIRA 17:4)

SHAPIRO, M.B.

Improvement in ambulatory and polyclinic care. Zdrav. Turk. 4 no.5:
43-47 S-O '60. (MIRA 13:12)
(ASHKHABAD--HOSPITALS--OUTPATIENT SERVICES)

SHAPIRO, M.B., inzh.; MAKAROV, V.M., inzh.

Induction hardening of the pinions of low module reducing gears.
Trudy NIIKHIMMASH no.34:26-32 '60. (MIRA 14:1)
(Gearing)

SHAPIRO, M.B., inzh.; KRISTAL', M.M., inzh.; MOSKVIN, N.I., inzh.; MAKAROV,
V.M., inzh.

Extrastrong acid-resistant steel for the chemical machinery
manufacture. Khim.mash. no.2:26-31 Mr '62. (MIRA 15:3)
(Steel) (Chemical engineering—Equipment and supplies)

SHAPIRO, M.B., inzh.; KRISTAL', M.M., inzh.; SOVETNIKOVA, Ye.N., inzh.;
BELINKIY, A.L., kand.tekhn.nauk

Heat treatment of electrically welded Kh18N9T steel pipe. Metalloved.
i term. obr. met. no.8:26-29 Ag '62. (MIRA 15:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut
khimicheskogo mashinostroyeniya.

(Pipe, Steel--Welding)
(Steel alloys--Heat treatment)

Chem. of Titanium: Vol. 1, 1964.

Reaction of titanium to carbon in stainless steel. Metallogr. i
term. obr. met. no. 1:39-40, 1964.

(NTIS 17:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut
khitimicheskogo mashinostroyeniya.

SHAPIRO, M.

CA

Page 19

X-ray investigation of the quality of fire-clay brick.
M. Shapiro and Yu. Kurdinovskii, *Stal* 5, No. 9, 77-81
(1963). The moisture content of fire-clay bricks can be
deterd. to within 6% by x-ray analysis. Thirty-eight
references. H. W. Rothmann

0A

9

Nature of nonmetallic inclusions in copper steels and in copper-chromium steels. N. Leve and M. Shapiro. *Stal* 9, No. 8, 30-6 (1939); *Chimie & Industrie* 43, 825. Microscopic analysis of nonmetallic inclusions sep'd. from various Cu and Cr-Cu steels by electrolysis showed that they consisted of the following compds.: labandite (MnS) contg. dissolved sulfides of Fe, Cr and Cu; chalcosine; (Mn, Fe)S; cuprite; high-SiO₂ glass enveloped in a film of oxysulfides of Fe, Mn and Cu, or of oxysulfides of Fe and Cu; SiO₂ contg. some Cu; quartz; quartz glass; olivine; glass contg. Cr.

A. Papineau-Couture

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

YELIN, L., dotsent; SHAPIRO, M.

Increasing the strength of parts by chemical and heat treatment of surfaces. Mor. flot 7 no.7:36-38 J1 '47. (MLRA 9:6)

1.Kafedra tekhnologii metallov OIIMF.
(Ships--Maintenance and repair) (Metals--Hardening)

SHAPIRO, M.

Aug 1947

USSR/Heat Treatment
Corrosion - Rust

"Chemical Heat Treatment of Metal Surfaces," L. Elin, M. Shapiro, 5 pp

"Mor Flot" No 8

Conclusion to article in Jul 1947 issue, Continuous discussing case-hardening by nitriding, thermochrome plating, silicization and carburizing.

PA 16T10

SHAPIRO, M. B.

B. T. R.
June 1954
Metals-Heat Treatment

3
O & M
8433 Heat Treating the Surface of Welds in Stainless Steel. M. B. Shapiro. Henry Bratcher, Altadena, Calif., Translation no. 3187, 1 p. (From Vestnik Mashinostroeniya, v. 32, no. 8, 1952, p. 63-65.)
Experimental study on possible elimination of susceptibility of welded stainless steels to intergranular corrosion by treating surface with high-frequency current. Tables, micrographs, diagram. 2 ref.

SHAPIRO, M.B., inzhener; MIKHAYLINA, M.P., inzhener

Centrifugal ring pot casting. Sbor.st. NIIE IMMASH no.14:65-83 '53.
(Centrifugal casting) (MLRA 7:11)

SHAPIRO, M.B., inzhener

Thermal treatment of ring-shaped valve plates made of 3X13 steel.
Sbor.st. NIIKHIMMASH no.14:92-102 '53 (MLRA 7:11)
(Steel--Heat treatment)

SHAPIRO, M.B., inzhener; BOGDANOV, V.V., inzhener.

Tempering crankshaft pins of compressors with an oxyacetylene torch. Vest.
mash. 33 no.10:56-58 0 '53. (MLRA 6:10)
(Tempering) (Crankshafts)

SHAPIRO, M.

4561. SHAPIRO, M. konveyerizatsiya sborochnykh rabot v mebel'nom proizvodstve.
m., koiz, 1954. 23 s.; uklyuch. obl, s ill. 22 sm. (tsentr. sovet promysl.
kooperatsii SSSR. tekhn. ^{op}pytom. byulleten'. 22). 1.000 ekz. bespl.-sost.
ukazany na 2-y s.-/54-15083zh/

674.23/684.57:658.281

SO: Knizhnaya Letopis', Vol. 1, 1956

SHAPIRO, M.B., inzhener; RUMYANTSEV, V.A., inzhener.

Increasing the durability of compressor valve disks. Vest. mash.
36 no.8:3-6 '56. (MLRA 9:10)

(Valves)

SHAPIRO, M.B.

18
Effect of isothermal heat-treatment on the endurance strength and wear resistance of steel. M. B. Shapiro. *Metallurg. i Obrabotka Metal.* 1957, No. 3, 61-60 (British translation No. 3973).—The steels were: I, 20KhN3FA, contg. 0.22% C, 0.21% Si, 0.36 Mn, 0.92 Cr, 3.50 Ni, 0.32 V; II, 30KhN3SA, contg. 0.23 C, 1.03 Si, 0.95 Mn, 0.87 Cr, 0.26 Ni; and III, 3Kh13, contg. 0.32 C, 0.6 Si, 0.46 Mn, 13.6 Cr, and 0.62 Ni. Rotating-beam endurance specimens and wear specimens 25 mm. high, 16 mm. in outside diam. and 10 mm. in inside diam. were prepd. from annealed bars. Endurance testing was based on 5×10^6 cycles, and wear testing was done using a pressure of 25 kg./sq. cm. against cast irons for 5000 revolutions (200 m.) at a velocity of 1.25 m./min. Before testing, each steel was given 1 of 2 heat treatments; (a) oil quench plus 2-hr. tempering, or (b) isothermal transformation. The austenitizing temps. were the same for both treatments and were: I, 850°; II, 850°; III, 1050°. The tempering temps. were 380, 400, and 300°, and the temps. of isothermal transformation were 250, 350, and 320°, resp. The hardnesses were the same after both heat treatments and were 40, 44, and 43.2c, resp. Steels I and II transformed to acicular troostite in 20 min. at 350°, but steel III did not transform and during a subsequent oil quench it formed martensite. The endurance strengths of isothermally transformed specimens were 62.5, 67.5, and 65 kg./sq. mm., resp., while those of the quenched specimens were 50, 61.5, and 61. The wear resistance of isothermally transformed specimens of steels I and II was higher than that of quenched specimens by a factor of 2, whereas the factor for steel III was 1.5. The higher properties were also found in a trial application. A. G. Gulya.

SOV/137-59-1-1814

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 240 (USSR)

AUTHORS: Moskvina, N. I., Shapiro, M. B., Gavrilov, V. M.

TITLE: Bright Quenching of Steel in a 50% Solution of Sodium Hydroxide is Free of Deformation (Svetlaya bezdeformatsionnaya zakalka stali v 50%-nom rastvore yedkogo natra)

PERIODICAL: Sb. statey. Vses. nauch. i konstrukt. in-t khim. mashinostroyeniya, 1957, Vol 23, pp 67-75

ABSTRACT: In the process of investigating the quenching hardenability of aqueous NaOH solutions it was established that, compared with other quenching media, the employment of a 50% NaOH solution for quenching of carbon and low-alloy steels ensures a more complete and uniform quenching combined with a lesser degree of deformation and lower susceptibility to cracking. A clean surface is obtained after quenching. During cooling of steel in a 50% NaOH at a temperature of 20°C the rate of cooling in the range of temperatures between 750 and 550°C is 700-1400°C/sec, whereas in the region of martensite transformations it amounts to 50-100°C/sec. In order to stabilize the operation of the alkaline bath, the surface of the solution should be coated with a layer of oil 10-20 mm thick. M. Ch.

Card 1/1

SHAPIRO, M.B. , inzh.; MAKAROV, V.M., inzh.

Increasing the durability of compressor valve plates. Sbor.
st. NIIKHIMMASH no. 23:96-104 '57. (MIRA 12:5)
(Steel--Heat treatment)
(Valves)

SOV/137-59-1-1237

Translation from: Referativnyy zhurnal Metallurgiya, 1959, Nr 1, p 169 (USSR)

AUTHOR: Shapiro, M. B.

TITLE: Influence of Isothermal Heat Treatment on the Endurance and Wear Resistance of Steel (Vliyaniye izotermicheskoy obrabotki na vyнослиvost' i iznosostoykost' stali)

PERIODICAL: Sb. statey. Vses. n.-i. i konstrukt. in-t khim. mashinostr., 1957, Nr 23, pp 105-110

ABSTRACT: Ref. RzhMet, 1958, Nr 3, abstract 6001

Card 1/1

GVOZDEV, A.; SHAPIRO, M.

Natural gas as turbine fuel. Tekh.mol. 26 no.2:19 '58.
(MIRA 11:2)

1.Zamestitel' nachal'nika Glavpodzemgaza (for Gvozdev). 2.Starshiy
inzhener Glavpodzemgaza (for Shapiro).
(Gas turbines)

344.51
S/184/62/000/002/002/004
D041/D112

18.8310
11.1160

AUTHORS:

Shapiro, M.B., Kristal', M.M., Moskvina, N.I., Makarov, V.M.,
Engineers

TITLE:

High-strength acid-proof steel for chemical machine building

PERIODICAL:

Khimicheskoye mashinostroyeniye, no. 2, 1962, 26-31

TEXT: The authors tested X15H9Mo (Kh15N9Yu) high-strength austenite-martensite steel at NIIKhimMASH in order to determine its suitability for use in machines operating in aggressive media. The effect of thermal treatment on the structure of the steel, on its mechanical properties and on its resistance to corrosion in various media was investigated. Cold treatment increased the hardness. After normalizing from 1,000°C, the steel had a purely austenite structure; reducing the normalizing temperature to 950°C and below, increased the amount of carbides and changed the position of the martensite point and the quantity of formed martensite. After cold treatment and aging, the hardness values were higher at all temperatures. The

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S/184/62/000/002/002/004
D041/D112

High-strength acid-proof ...

maximum strength was obtained after the aging of steel which was previously normalized at 750-800°C and cold-treated. The maximum strength was obtained after aging at 450-475°C for 1 hour. Maximum plasticity and toughness were obtained by aging at 350°C, whereby the strength was still high enough. The corrosion tests were carried out on sheets, forgings, a rod and welded specimens of various thicknesses, heat-treated at various normalizing and aging temperatures. The maximum corrosion rate was observed in HNO₃ as well as in an acid solution of copper vitriol after aging at 550°C. An increase of the aging time from 1 to 5 hours (at 475°C) showed that the corrosion resistance decreased in 65% HNO₃ by approximately 3 times. The greatest corrosion resistance was observed after tempering at 1,000 to 1,100°C, when the steel had an almost pure austenite structure; the greatest intercrystalline corrosion was observed after normalizing at 760°C. The steel was successfully used in some test machines developed by the NIIKhIMMASH, and is recommended for the valve plates of compressors; further research is needed before the steel can be used for casings of machines. There are 7 figures, 2 tables, and 3 references; 1 Soviet bloc and 2 non-

Card 2/3

SHAPIRO, M.B., inzh.

New investigations of stabilized and nonstabilized acid-resistant
steels. Khim.mash. no.4:41-42 J1-Ag '62. (MIRA 15:7)
(Steel, Stainless--Testing)

S/277/63/000/004/002/013
A004/A127

AUTHORS: Shapiro, M.B., Belinkiy, A.L., Moskvina, N.I.

TITLE: Prospects of developing and utilizing new high-strength stainless steels in chemical machine building

PERIODICAL: Referativnyy zhurnal. Otdel'nyy vypusk. 48. Mashinostroitel'-nyye materialy, konstruktivnyy i raschet detaley mashin, no. 4, 1963, 11, abstract 4.48.72. (Tr. Vses. n.-i. i konstrukt. in-t khim. mashinostr., 1962, no. 40, 52 - 61)

TEXT: A survey on new tendencies in developing high-strength corrosion-resistant steels that can be used in chemical machine building. Precipitation-hardened steels of the austenite-ferrite and austenite-martensite classes are mostly used. Austenite-ferrite steels possess high mechanical and casting properties and do not tend to corrosion embrittlement. Thus, the yield point e.g. of austenite-ferrite steels exceeds that of austenitic steels by a factor of 3 - 4. Austenite-martensite steels have also a high strength and a sufficient ductility, corrosion resistance and weldability. There are 12 references.

[Abstracter's note: Complete translation.]

Card 1/1

L 15501-63

EWI(q)/EWI(m)/BDS AFFTC/ASD

DE/JD/JG

ACCESSION NR: AR3001635

S/0137/63/000/004/I081/I081

SOURCE: RZh. Metallurgiya, Abs. 4I444

AUTHOR: Shapiro, M. B.; Moskvin, N. I.; Kristal', M. M.; Makarov, V. M.

TITLE: A new high-strength stainless steel ⁴

CITED SOURCE: Vses. n.-i. i konstrukt. in-t khim. mashinostr, no. 40, 1962, 62-79

TOPIC TAGS: stainless steel, heat treatment, Kh15Kh9Yu, C, Si, Mn, Cr, Ni, S, P, Al, austenite, martenite, Kh15N9Yu, argon-arc welding, welding

TRANSLATION: Research has been conducted on the effect of heat treatment on the mechanical properties and corrosion resistance of precipitation hardening steel Kh15Kh9Yu containing 0.05-0.09% C, 0.34-0.59% Si, 0.31-0.60% Mn, 14.3-16.03% Cr, 7.9-8.05% Ni, 0.006-0.07% S, 0.012-0.08% P, and 0.93-1.25% Al. This material shows much promise for chemical machine building. Kh15Kh9Yu steel is of the austenite-martensite class and has an austenitic structure after normalizing at 975-1,050°C; and it can also be subjected to various production operations. As

a res
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L 15501-53

ACCESSION NR: AR3001635

a result of cold treatment at -70°C , the steel undergoes a martensite transformation and contains up to 70% martensite which increases its strength appreciably. When aged at $350-500^{\circ}\text{C}$, tensile strength increases from 115 to 140 kg/mm^2 . With respect to heat treatment the mechanical properties of Kh15Kh9Yu are changed as follows: tensile strength, 100 to 150 kg/mm^2 ; yield strength, 30 to 140 kg/mm^2 ; % elongation, 8 to 40%; reduction in area, 40 to 65%; and impact strength, up to 20 kg-meters/cm^2 . Optimum combination of mechanical properties is obtained after heat treatment as follows: normalizing at 975°C , cold treatment at -70°C for 2 hours, aging for 1-2 hours at $350-500^{\circ}\text{C}$. Resulting properties are: tensile strength $> 128 \text{ kg/mm}^2$; yield strength $> 90 \text{ kg/mm}^2$; % elongation $> 12\%$; reduction in area $> 40\%$; and impact strength $> 5 \text{ kg-meters/cm}^2$. Steel Kh15Kh9Yu is not inclined to intercrystalline corrosion after this heat treatment and can be welded by an argon-arc using electrode wire made of the same steel. After a complete heat treatment cycle, strength factor of a welded seam is 0.9 higher.

DATE ACQ: 20 May 63

SUB CODE: ML

ENCL: 00

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S/277/63/000/004/004/013
A004/A127

AUTHORS: Shapiro, M.B., Moskvina, N.I., Kristal', M.M., Makarov, V.M.

TITLE: New high-strength stainless steel

PERIODICAL: Referativnyy zhurnal. Otdel'nyy vypusk. 48. Mashinostroitel'-nyye materialy, konstruktsii i raschet detaley mashin, no. 4, 1963, 12, abstract 4.48.80. (Tr. Vses. n.-i. i konstrukt. in-t khim. mashinostr., 1962, no. 40, 62 - 79)

TEXT: The authors present the results of investigating the effect of heat treatment (normalizing, cold treatment, ageing) on the mechanical properties and corrosion resistance of the new X15H9Ю (Kh15N9Yu) precipitation-hardened stainless steel having the following composition (in %): C 0.05 - 0.09, Si 0.34 - 0.59, Mn 0.31 - 0.6, Cr 14.3 - 16, Ni 7.9 - 9.5. It is pointed out that an optimum combination of strength, ductility, notch toughness and corrosion resistance of the Kh15N9Yu steel is obtained after the following heat treatment: normalizing at 975°C, cold treatment at -70°C for 2 hours, ageing at 350 - 400°C for 1 - 2 hours; then the following values

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New high-strength stainless steel

S/277/63/000/004/004/013
A004/A127

are obtained: $\sigma_b \geq 128$, $\sigma_s \geq 90$ kg/mm², $\delta \geq 12\%$, $\psi = 40\%$, and $a_k \geq 5$ kgcm/cm². After this optimum heat treatment of the steel it does not tend to inter-crystalline corrosion and is not much inferior to the 1X18H9T (1Kh18N9T) steel as to general corrosion resistance in a number of media.

[Abstracter's note: Complete translation.]

Card 2/2

S/137/63/000/003/007/016
A006/A101

AUTHORS: Shapiro, M. B., Kristal', M. M., Belinskiy, A. L., Sovetnikova, Ye. N.

TITLE: Investigating the heat treatment of electric-welded pipes made of 1X18H9T (1Kh18N9T) steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1963, 10, abstract 3E57 ("Tr. Vses. n.-i. i konstrukt. in-t khim. mashinostr.", 1962, no. 40, 80 - 100)

TEXT: The reduced corrosion resistance in various media of electric-welded 1Kh18N9T steel pipes is explained by structural changes occurring during the welding process in the weld metal and the heat-affected zone. Structural changes in the weld make the welded pipes prone to intercrystalline corrosion and reduce their resistance in boiling 65% HNO₃. An increase in the corrosion resistance is achieved by heat treatment under the following conditions: heating at 1,150°C during 4 minutes and cooling in water. Subsequently the content of δ -ferrite in the weld decreases from 8 - 12% almost down to zero and the

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Investigating the heat treatment of...

S/137/63/000/003/007/016
A006/A101

concentrational heterogeneity of the weld metal structure is eliminated to a considerable degree. Quenching with the aid of induction heating at 1,250 - 1,300°C as well as quenching with heating in the furnace at 1,050 - 1,150°C, reduces sharply the proneness of electric-welded pipes to corrosion cracking.

V. Fomenko

[Abstracter's note: Complete translation]

Card 2/2

S/276/63/000/003/001/006
A004/A127

AUTHORS: Shapiro, M. B., Kristal', M. M., Belinskiy, A. L.,
Sovetnikova, Ye. N.

TITLE: Investigating the heat treatment of electrically welded
tubes of 1X18H9 T(1Kh18N9T) steel

PERIODICAL: Referativnyy zhurnal, Tekhnologiya mashinostroyeniya, no. 3,
1963, 58, abstract 3B246 ("Tr. Vses. n.-i. i konstrukt.
in-t khim. mashinostr.", 1962, no. 40, 80 - 100)

TEXT: The investigations were carried out on tubes 25, 32, and
38 mm in diameter, wall thickness 2 mm, manufactured by the Moscow and
Nikopol Tube Plants. The tubes were made from strip by argon arc welding
on special tube welders. The chemical composition of the tube metal was
(in %): C - 0.09, Cr - 18.2, Ni - 10.25, Ti - 0.39. The studies com-
prised the effect of furnace heating at 1,050 and 1,150°C with 8 and 4
minutes holding respectively and stabilizing annealing at 870 and 920°C
with 2 hours holding, and also the effect of h-f current induction heat-

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Investigating the heat treatment

S/276/63/000/003/001/006
A004/A127

ing on the structure, hardness and corrosion resistance of the base metal and the welding seam. Simultaneously the effect of the heating temperature on the tendency of the tubes to corrosion cracking was investigated. As a result of the investigations carried out it was found that corrosion resistance of welded tubes in nitric acid was obtained by the following treatment: Heating at $1,150^{\circ}\text{C}$ for four minutes, cooling in water, upon which the δ -ferrite content in the weld is reduced from 8 - 12% to nearly 0, while concentration nonhomogeneities of the seam metal structure are eliminated to a considerable extent. Analogous results may be obtained in hardening by means of h-f current induction heating up to $1,250 - 1,300^{\circ}\text{C}$ with 5 - 6 seconds holding. Heat treatment increases the corrosion resistance of electrically welded tubes and makes it possible to extend their applicability in chemical machine building. There are 9 figures and 11 references.

T. Kislyakova

[Abstracter's note: Complete translation]

Card 2/2

L 12690-63 EWP(q)/EWT(w)/BDS AFETC/ASD JD/WB
ACCESSION NR: AP3003443 S/0129/63/000/007/0010/0015

60
56

AUTHORS: Shapiro, M. B.; Belinkiy, A. L.

TITLE: Effect of heat treatment on properties of type Kh21N5T
ferrite-austenite steels

4

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 7,
1963, 10-15

TOPIC TAGS: Kh21N5T steel, heat treatment of steel, ferrite-austen-
ite steel, GOST 5632-61

4

ABSTRACT: Authors present a survey of ferrite-austenite steels which
comprise All-Union State Standard 5632-61. These steels are replac-
ing steels with a higher nickel content, and they have high mechan-
ical properties. When ready for delivery, they have a yield point of
40 kg/mm², which is twice as high as that of stainless austenite
steels. Their use in chemical machinery and other branches of in-
dustry has been hindered by insufficient knowledge of the effect of
heat treatment on the structure, mechanical properties and corrosion
resistance in various media. Authors attempted to remedy this by

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L 12690-63

ACCESSION NR: AP3003443

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testing the effect of heat treatment on the structure of Kh21N5T sheet steel, as well as on 1Kh21N5T forgings. Authors conclude that annealed or normalized ferrite-austenite steels possess a nonequilibrium structure, and, therefore, their repeated heating at much lower temperatures causes complex structural transformations which are associated with the formation of austenite (γ' -phase), carbides and σ -phase. OKh21N5T steel can be maximally strengthened after heat treatment at 760C, including unbalancing, which leads to martensite formation after cooling down to room temperature. Cold treatment augments the martensite transformation and increases the strength. The low impact toughness of the 1Kh21N5T steel forgings was caused by the formation of δ -ferrite inclusions within the austenite grains as a result of reheating during forging. In order to preclude such a condition and to increase the impact toughness, it was recommended that heat treatment be carried out at 1000C for 3 hours. This does not cause any tendency for intercrystalline corrosion and lowering of corrosion resistance in a number of media. 4 Orig. art. has: 4 tables.

ASSOCIATION: NIKhIMMASH

Card 2/3

SHAPIRO, M.B., inzh.; BRELINIKIY, A.I., kand. tekhn. nauk; MOSKVIN, N.I.,
inzh.

Prospects of the development and introduction of the new types
of steel in the manufacture of chemical machinery. Khim. mashino-
str. no.1: 28-31 Ja'63 (MIRA 17:7)

L 57059-65 EPA(s)-2/EWT(m)/EPF(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/
EWA(c) Pf-l/Pad IJP(c) MJW/JD/HW/WB/HM
ACCESSION NR: AR5008973

S/0137/65/000/001/I070/I070
669.15.018.85

SOURCE: Ref. zh. Metallurgiya, Abs. 11463

AUTHOR: Istrina, Z. F.; Krutikov, A. N.; Shevelkin, B. N.; Shapiro, M. B.;
Akshentseva, A. P.; Khimushin, F. F.; Frolikova, Ye. M.; Belinkiy, A. L.

TITLE: Properties of corrosion-resistant nickel-chrome steel with reduced nickel content

CITED SOURCE: Tr. Vses. n.-i. i konstrukt. in-t khim. mashinostr., vyp. 45, 1963, 76-93

TOPIC TAGS: metallurgy, ferrous metals, corrosion resistance, heat treatment, welding

TRANSLATION: Austenite-ferrite OKh21N5T, PKh21N5T and OKh21N6M2T steels and OKh17N5G9AB of the austenite class were studied. The OKh21N5T and OKh21N6M2T steels were quenched from 1000°, OKh17N5G9AB from 1150°. Additional toughening of steels of the austenite-ferrite class can be achieved by age-hardening at 475° for

Card 1/2 * (PKh21N5T should be 1Kh21N5T)

L 57059-65

ACCESSION NR: AR5008973

2 hours. The σ_s of OKh21N6M2T steel is increased from 45 to 51 kg/mm² and that of OKh21N5T steel to 50 kg/mm² by heat treatment, which produces martensite conversion. Conditions of heat treatment in this case are: heating to 750°; cold working at -70° for two hours and age-hardening at 350° for two hours. The welding conditions for the steels studied correspond to the parameters for steels of type 18-8 and 18-12. Heat treatment of OKh21N5T and OKh21N6M2T steels should be done at 1080-800°; for OKh17N17M5G9AB steel at 1080-900°. OKh21N5T and OKh21N6M2T steels have high corrosion resistance and do not have a tendency toward intercrystalline corrosion after quenching from 1000°, and the same is true of OKh17N5G9AB steel for quenching from 1150°. Seams welded with an austenite electrode are resistant to intercrystalline corrosion.

SUB CODE: MM, IE

ENCL: 00

Card 2/2

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